



## Can national management measures achieve good status across international boundaries? - A case study of the Bay of Biscay and Iberian coast sub-region

Marianna Cavallo<sup>a,b,c,d,\*</sup>, Michael Elliott<sup>b</sup>, Victor Quintino<sup>c</sup>, Julia Touza<sup>d</sup>

<sup>a</sup> Department of Applied Economics, University of Vigo, Vigo 36310, Spain

<sup>b</sup> Institute of Estuarine & Coastal Studies (IECS), University of Hull, Hull HU67RX, UK

<sup>c</sup> Department of Biology & CESAM, University of Aveiro, 3810-193 Aveiro, Portugal

<sup>d</sup> Environment Department, Wentworth Way, University of York, Heslington, York YO105NG, UK

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### ABSTRACT

Coastal countries have historically implemented management measures to improve the status of their national marine waters and little effort has been made to take coordinated actions to improve the status of the entire region or sub-region of which they are part. At the European level, the adoption of the Marine Strategy Framework Directive (MSFD) aims to remedy this deficiency and to promote coordination among countries and an integrated management of the marine environment. The MSFD requires each country to propose and adopt a programme of measures to achieve Good Environmental Status of the regional seas. This study compares the programmes of measures of the three countries of the Bay of Biscay and Iberian coast sub-region – France, Portugal and Spain – presenting a novel use of multivariate analyses using semi-quantitative policy information. Among the four North-East Atlantic sub-regions, this study area was chosen because it showed the lowest levels of coherence during the first phase of the implementation of the MSFD, according to the European Commission assessment. The results show the differences among the three programmes, confirming the difficulties that neighbouring countries face when they are required to adopt common approaches in the implementation of this multi-sectoral Directive. Most of the measures developed in the sub-region address marine biodiversity but this is through a wide range of actions, covering different pressures and different species/habitats. The integration with other legislation is more similar between Spain and France and differs between these and Portugal. The three countries also recognise the lack of knowledge to perform the economic analysis, in particular in quantifying the costs of and social benefits derived from their measures. It is concluded here that a better use of the regional and European coordination structures is needed to fill the gaps in knowledge and to exchange good practices. More political will is necessary to take action at European and international level to mitigate the impact of those socio-economic activities through joint programmes, for which Community funding is available.

### 1. Introduction

The European Union (EU) has played a central role in the field of sustainable development in recent decades with the adoption of more than 200 environmental directives and regulations (Beunen et al., 2009; Boyes and Elliott, 2014). In many cases, these statutes were produced historically in a sectoral and uncoordinated manner and so, in 2007, the European Commission (EC) proposed the Integrated Maritime Policy to improve synergies among sectoral maritime policies (Bagagli, 2015). The Marine Strategy Framework Directive (MSFD; EC, 2008) is an important component of the Integrated Maritime Policy and has been adopted to achieve an integrated approach in the exploitation of marine resources and protection of ecosystems, coordinating between EU

Member States at the level of region and sub-region. The framework has been transposed into national legislation by specific strategies which started with an initial assessment of the characteristics of marine waters, including a detailed study of the main pressures and impacts and an economic and social analysis. On the basis of such an assessment, Member States defined what they consider Good Environmental Status (GES) and established a set of targets to achieve it. In 2014, monitoring programmes were established to assess the progress towards GES and, two years later, national programmes of measures (PoM) were published to achieve or maintain GES. These phases will be updated during the second cycle starting in 2018.

Management measures are actions to control the marine activities and prevent state changes and impacts on human welfare (Elliott et al.,

\* Corresponding author. Department of Applied Economics, University of Vigo, Vigo 36310, Spain.  
E-mail address: [cavallom16@gmail.com](mailto:cavallom16@gmail.com) (M. Cavallo).

2017) and, to be successful, these should be focused on the so-called 10-tenets, namely to be ecologically sustainable, economically viable, technologically feasible, socially desirable or tolerable, morally correct, legally permissible, administratively achievable, politically expedient, culturally inclusive and effectively communicable (Elliott, 2013).

This paper compares the PoM of the three countries bordering the Bay of Biscay and Iberian coast sub-region – France, Portugal and Spain – to identify the main differences in the reporting, number of human pressures addressed, spatial coverage (national, regional and European), economic analysis and integration with other policies. This sub-region was chosen as it presented very low levels of coherence during the first phase of the MSFD, especially when setting targets and definition of GES (EC, 2014b; Cavallo et al., 2016).

### 1.1. Requirements of the programmes of measures (PoM)

To improve coherence and comparability among national PoM at European level, the EC developed non-legally binding recommendations to be considered by all Member States when preparing their reports (EC, 2014a). At the regional level, the Regional Seas Convention (RSC) OSPAR (2015) complements that of the EC, to guide countries of the North-East Atlantic towards a more coordinated development of their programmes in line with OSPAR work and existing measures. National reports should indicate the link between the proposed measures and the established environmental targets, one or several qualitative descriptors, pressures and expected effect (EC, 2014a). Moreover, Article 13 and Article 5 (2) of the Directive require Member States to ensure that their PoM are coherent and coordinated across the marine region or sub-region concerned. The RSC, such as OSPAR, play a key role in coordinating measures, mainly as a platform to exchange information and by developing measures at regional level focused on transboundary issues. Hence, a regional approach under the guidance of RSC should be used to manage the marine environment and to mitigate the impact of those pressures that transcend national borders (e.g. chemical contamination and nutrient enrichment, litter, invasive species, underwater noise) and Member States have to indicate the level of implementation of their measures (national, regional, EU/international) and their effects, positive or negative, at supra-national scale (EC, 2014a).

National PoM should include existing measures from other national, EU and international legislative instruments, and new measures, when existing ones are not sufficient to meet the environmental targets and GES. New measures can be identified through consultation with stakeholders, the scientific community, other Member States, and from RSC, or they can even expand or reinforce existing measures (EC, 2014a). Both EC and OSPAR guidelines provide a comprehensive list of policies and agreements that can be integrated within the scope of the MSFD (see also Boyes et al., 2016). For example, the Water Framework Directive (WFD) and the MSFD have several aspects in common and a geographical overlap for the coastal area (Borja et al., 2010). The first cycle of the MSFD is being implemented simultaneously with the second cycle of the WFD and PoM had to be adopted for both directives by December 2015 with the existing WFD PoM being updated while MSFD PoM are developed for the first time (EC, 2014a). In both directives, the measures have to be aggregated under a predefined set of Key Type Measures (e.g. KTM 29 - Measures to reduce litter in the marine environment) (EC, 2014a) and, considering that many of the pressures on the EU seas are land-based, most of the WFD KTM need to be included in the MSFD PoM to achieve or maintain GES and to enable an integrated approach between policies (the complete list of KTM is presented in the Appendix).

Member States are also required to carry out an impact assessment of their measures, including a Cost-Effectiveness Analysis (CEA) and Cost-Benefit Analysis (CBA). CEA aims to identify the ‘least-cost approach’ among a number of measures designed to meet the same objective. A CBA evaluates and compares the present value of social

benefits and costs of a measure or policy intervention (EC, 2014a). Several authors have discussed the requirements (Bogaert, 2012; Bertram and Rehdanz, 2013; Bertram et al., 2014; Börger et al., 2016) and limitation of the MSFD economic analysis (Oinonen et al., 2016).

The CEA and CBA are required for new measures and, when needed, these analyses should be conducted at regional and sub-regional level (EC, 2014a). The EC recommendation document recognises that a limited knowledge of the functioning of marine ecosystems complicates the assessment of the effects of policy measures on ecosystem services flow and the quantification of the impacts that these have on human well-being (EC, 2014a).

The MSFD text also requires Member States to identify clearly any instances or exceptions in their PoM within their marine waters where the GES cannot be achieved (Article 14) or when actions at EU and international level are necessary to address environmental issues through joint programmes (Article 15). There can be some situations where Member States are not required to take specific steps (Long, 2011; Boyes et al., 2015; Elliott et al., 2015; Saul et al., 2016). For example, “provision should be made where it is impossible for a Member State to meet its environmental targets because of action or inaction for which it is not responsible, (...) or because of actions which that Member State has itself taken for reasons of overriding public interest which outweigh the negative impact on the environment (...)” (Article 14).

## 2. Methodology

The PoM of Spain and France were published on the EIONET web page<sup>1</sup> (MAGRAMA, 2015; Ministère de l’Environnement, de l’Énergie et de la Mer, 2016a, 2016b). The PoM of Portugal consisted of two reports published in the DGRM web page<sup>2</sup> (MAM, SRMCT, SRA, 2014). The comparative analysis of national reports focused on the requirements described in the previous section, namely: the type of GES descriptors or groups of descriptors (e.g. Descriptor D2-Non-indigenous species), associated KTM, level of implementation (e.g. national, (sub)regional, EU and international), effect at supra-national scale, integration with other EU and international legislation, CBA and CEA. For this study, measures were arranged into six categories relating to particular MSFD Descriptors: Biodiversity (D1, D4, D6), Non-indigenous species (D2), Commercial fish and shellfish (D3), Introduction of nutrients/contaminants (D5, D8, D9), Marine litter (D10) and Other measures, covering Hydrological conditions (D7), the Introduction of Energy (D11) and Transverse measures. Transverse or horizontal measures are considered by the three countries to include legislative barriers, financial and methodological support, innovation, social and economic aspects, employment, training and others but were not included in the statistical analysis since they cover all descriptors and integrate mostly national legislation. For each category of descriptors, the measures were classified by key type (KTM).

In order to analyse how the three countries integrated existing policies in their PoM, a data matrix was prepared using the Sørensen similarity coefficient considering as samples the categories of descriptors per country and as variables the pieces of legislation (presence-absence data). This similarity matrix was viewed in a 2-dimensional ordination diagram obtained by non-metric multidimensional scaling (nMDS) and submitted to hypothesis testing under the null hypothesis of no significant difference among the countries, using Analysis of Similarities (ANOSIM). ANOSIM produces the statistic R, varying from –1 to +1. R is equal to +1 when all the categories of descriptors from one country are more similar to each other than to any from another country,

<sup>1</sup> <http://rod.eionet.europa.eu/obligations/612/deliveries?id=612&id=612&tab=deliveries&tab=deliveries&d=4014547-p=1&d=4014547-o=1&d=4014547-s=1>.

<sup>2</sup> [https://www.dgrm.mm.gov.pt/xportal/xmain?xpid=dgrm&actualmenu=1470807&selectedmenu=1641550&xpgid=genericPageV2&conteudoDetalhe\\_v2=1641651](https://www.dgrm.mm.gov.pt/xportal/xmain?xpid=dgrm&actualmenu=1470807&selectedmenu=1641550&xpgid=genericPageV2&conteudoDetalhe_v2=1641651).

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